

CLAIMS

We claim:

1. A thermoplastic elastomer nonwoven fabric roll made by piling and bonding thermoplastic elastomer filaments into a sheet of nonwoven fabric, and winding the nonwoven fabric thus formed around a tube thereby forming a nonwoven fabric roll, characterized in that the tension required to unroll the nonwoven fabric from the nonwoven fabric roll is 0.25 g/cm²/basis-weight or less.
2. A method of producing a thermoplastic elastomer nonwoven fabric roll, comprising: (a) piling thermoplastic elastomer filaments that have been melt-spun on a belt conveyor, thereby forming a sheet of nonwoven fabric, (b) peeling off the nonwoven fabric thus formed from the belt conveyor, and (c) winding the nonwoven fabric around a tube to form a nonwoven fabric roll, characterized in that the nonwoven fabric is peeled from the belt conveyor by a rotating roller disposed above the transportation zone of the belt conveyor.
3. The method of producing a thermoplastic elastomer nonwoven fabric roll according to claim 2, wherein the nonwoven fabric that has been peeled from the belt conveyor is expanded in width prior to being wound into the nonwoven fabric roll.
4. The method of producing a thermoplastic elastomer nonwoven fabric roll according to claim 3, wherein the nonwoven fabric that has been peeled from the belt conveyor is gradually expanded in width by sequentially performing a plurality of expansion steps.
5. An apparatus for producing a thermoplastic elastomer nonwoven fabric roll, comprising:
 - (a) a spinning device having a nozzle head for discharging a molten thermoplastic elastomer from nozzles and spinning filaments therefrom;

(b) a belt conveyor disposed below said nozzle head for transporting the filaments spun out of said nozzle head while piling the filaments into a sheet of nonwoven fabric thereon;

5 (c) a rotating roller for peeling off the nonwoven fabric from said belt conveyor; and

(d) a take-up device for winding up the nonwoven fabric around a tube; characterized in that said rotating roller is disposed above the transportation zone of said belt conveyor.

6. The apparatus for producing a thermoplastic elastomer
10 nonwoven fabric roll according to claim 5, wherein the axis of said rotating roller is disposed above the transportation zone of said belt conveyor within 30 cm of said belt conveyor.

7. The apparatus for producing a thermoplastic elastomer
15 nonwoven fabric roll according to claim 5, wherein the axis of said rotating roller is disposed above the transportation zone of said belt conveyor within 20 cm of said belt conveyor.

8. The apparatus for producing a thermoplastic elastomer
20 nonwoven fabric roll according to any one of claims 5, 6, or 7, wherein a width expanding device for expanding the width of the nonwoven fabric is disposed between the rotating roller and the take-up device.

9. The apparatus for producing a thermoplastic elastomer
25 nonwoven fabric roll according to claim 8, wherein a plurality of width expanding devices are disposed between the rotating roller and the take-up device so that the nonwoven fabric passes sequentially through the plurality of width expanding devices and is gradually expanded in the direction of width.